

ENERGY DEVELOPMENT PLANS

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THE ENERGY DEVELOPMENT PLANS IN CHINESE TAIPEI

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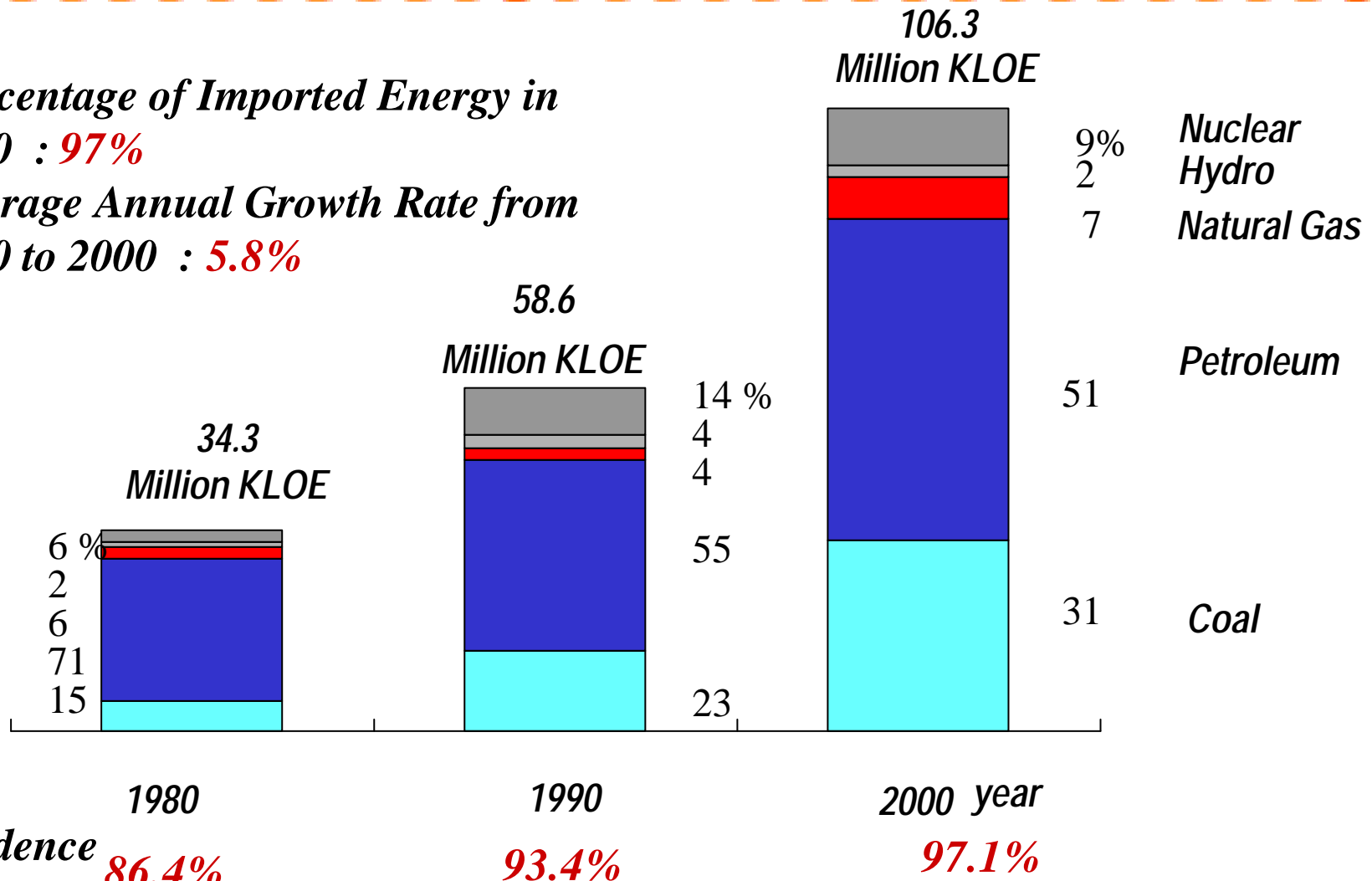
I. Energy Situation



1. Structure of Energy Supply

Percentage of Imported Energy in
2000 : **97%**

Average Annual Growth Rate from
1980 to 2000 : **5.8%**

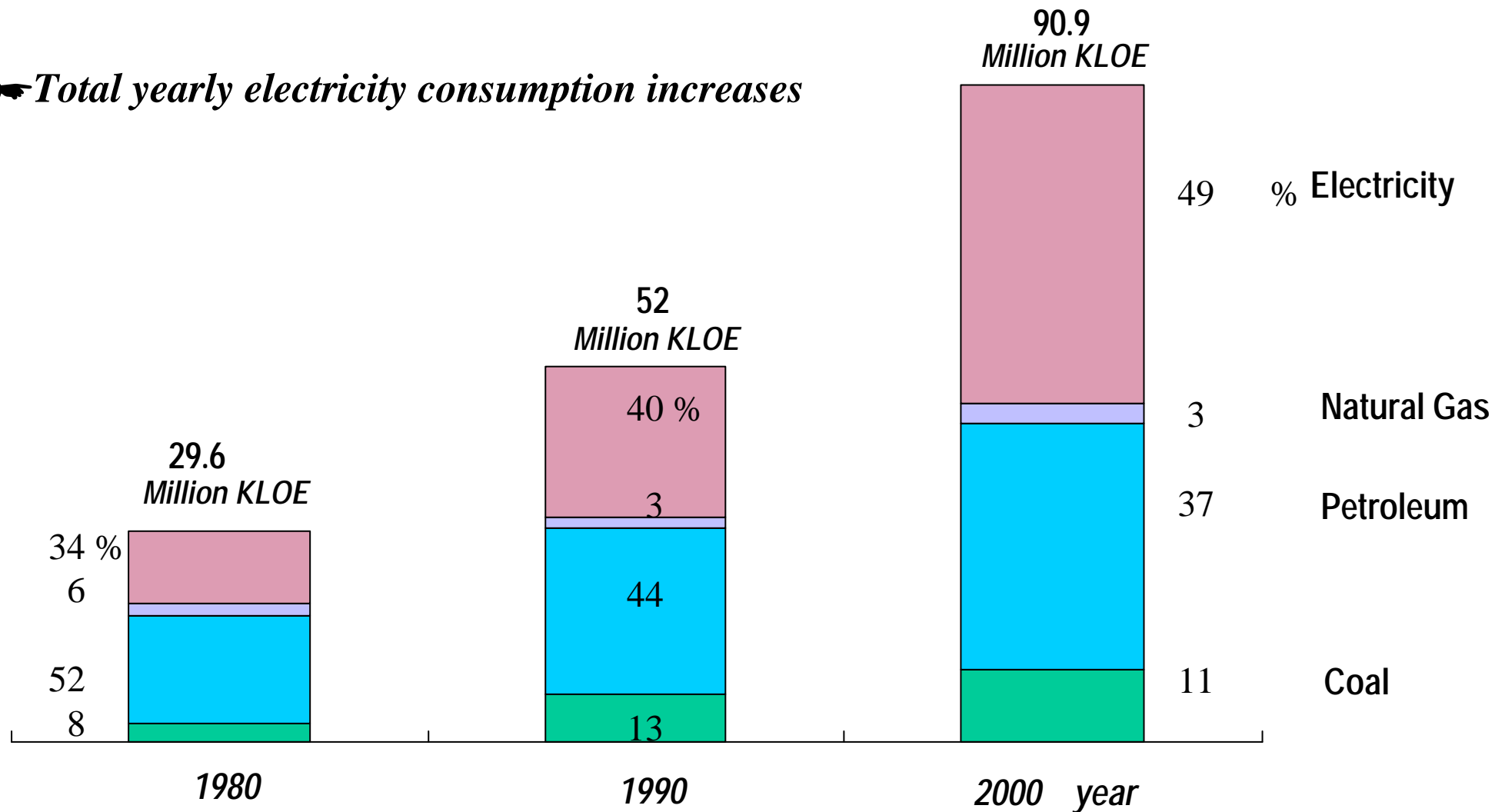


Dependence
on imports:



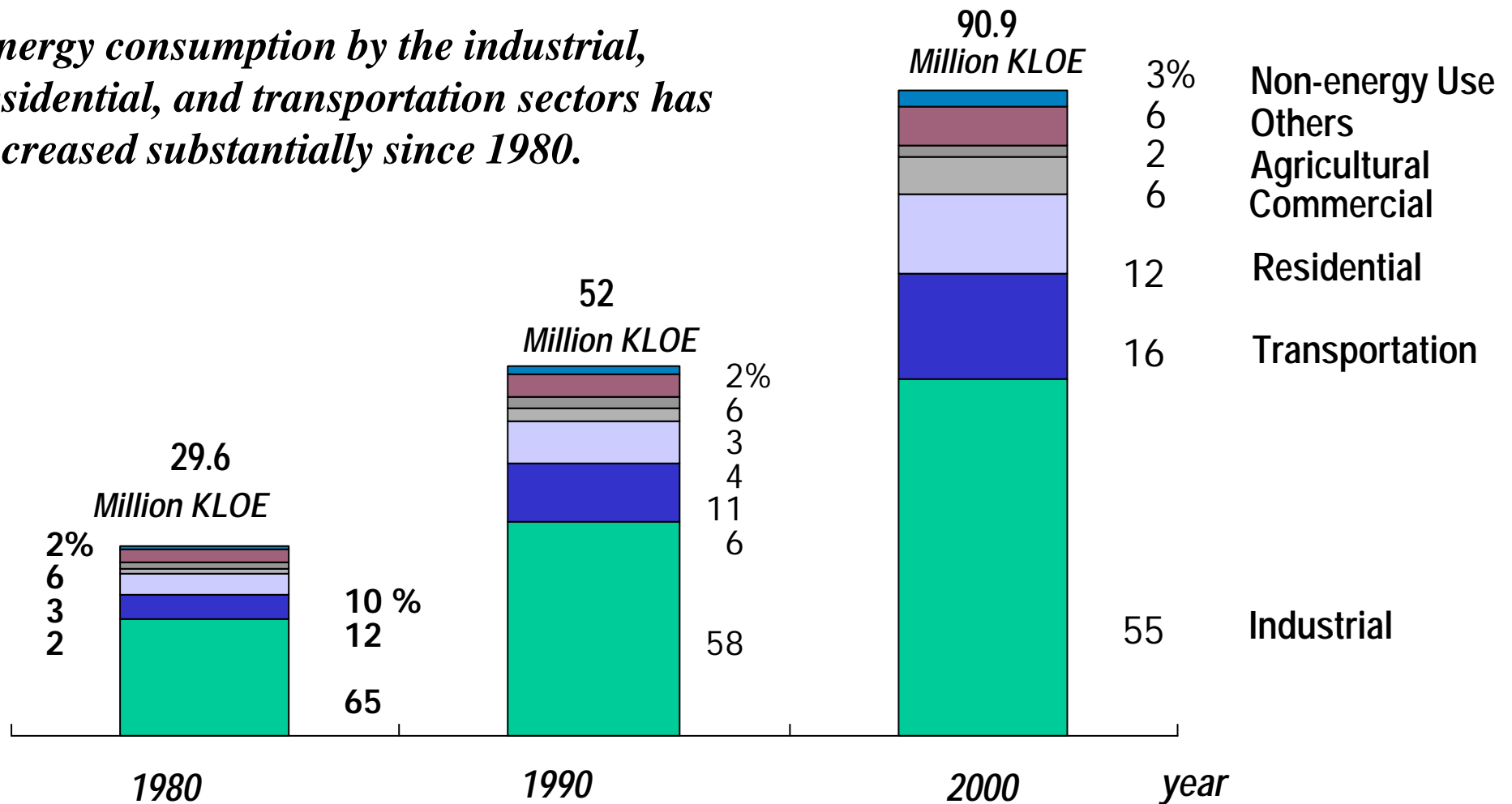
2. Structure of Energy Consumption - by energy forms

➡ Total yearly electricity consumption increases



3. Structure of Energy Consumption - by sectors

➡ *Energy consumption by the industrial, residential, and transportation sectors has increased substantially since 1980.*

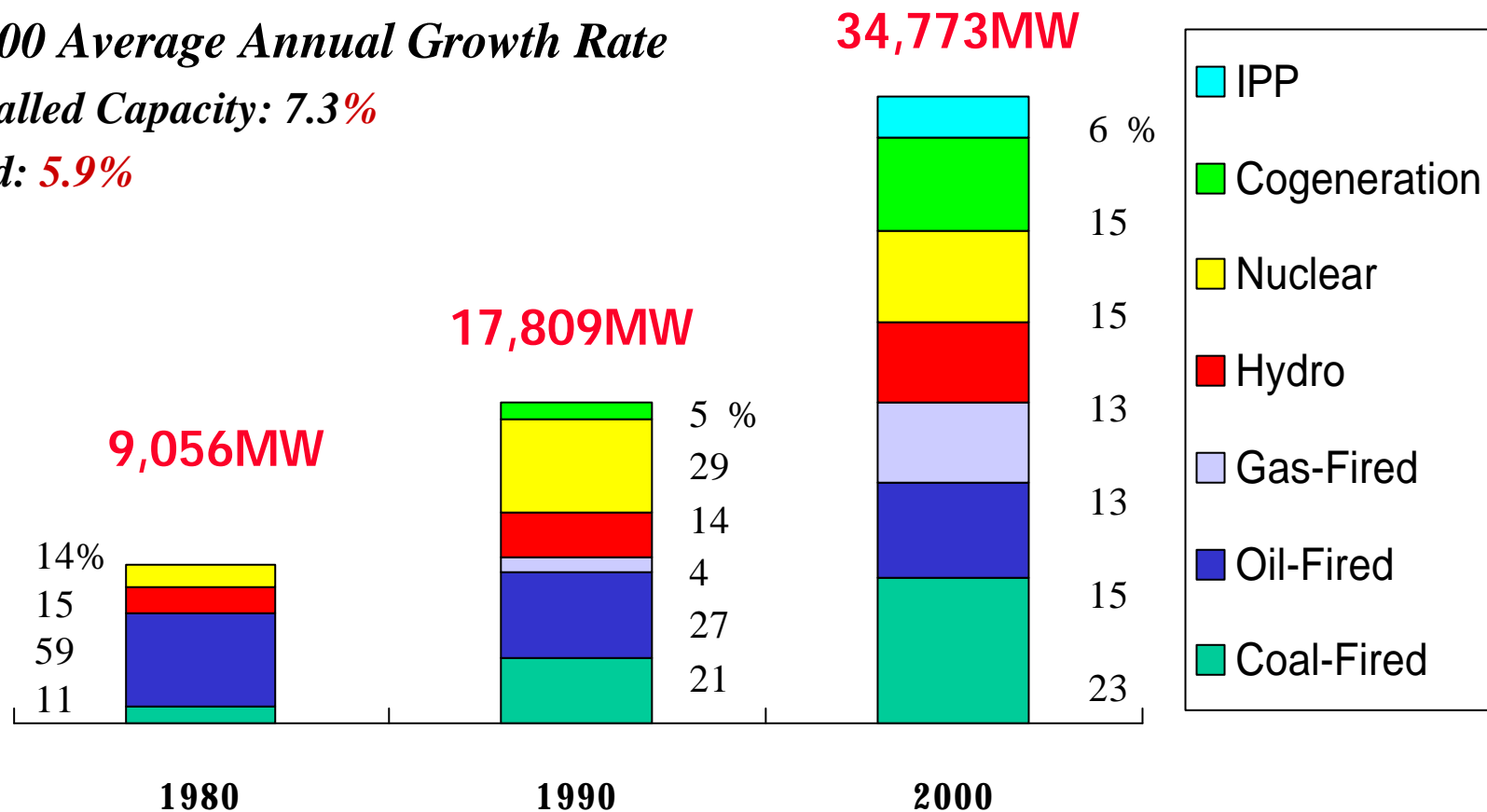


4. Installed Capacity of Power Stations

➔ **1990 - 2000 Average Annual Growth Rate**

• **Total Installed Capacity: 7.3%**

• **Peak Load: 5.9%**



Reserve Margin: 8.2 %

7.4 %

12.6 %

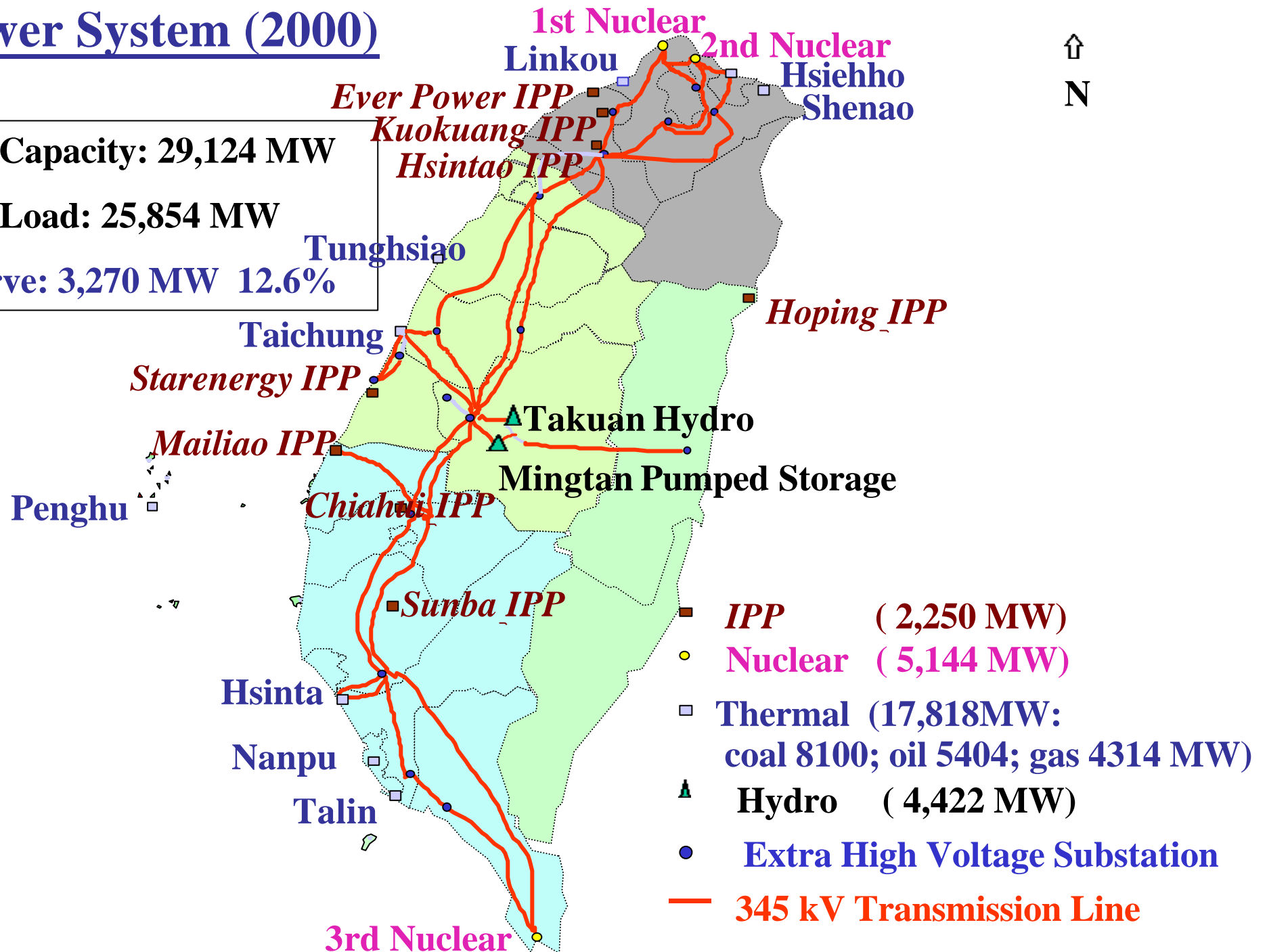


Power System (2000)

Peak Capacity: 29,124 MW

Peak Load: 25,854 MW

Reserve: 3,270 MW 12.6%



5. Status of Petroleum Industries

1. Refineries: 2

- ▶ Chinese Petroleum Corp. (Capacity:770KB/D)
- ▶ Formosa Petrochemical Corp.(Capacity:450KB/D;Operation: 300KB/D)

2. Importers: 4

3. Exporters 2

4. Wholesalers for gasoline/diesel 29

5. Gas Stations: 2,150

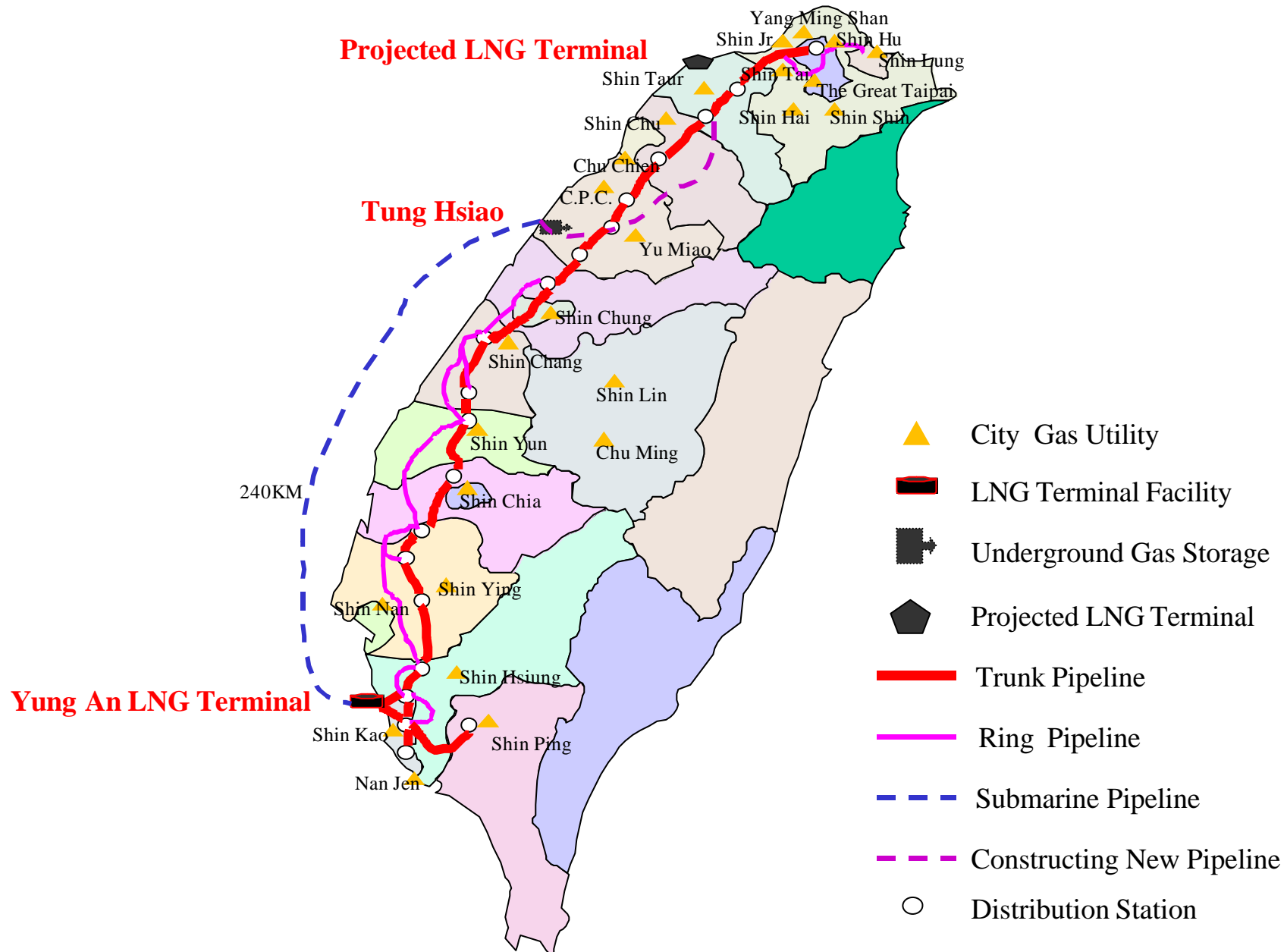
(CPC: 583; Contract with CPC:1,027; Contract with FPCC:450)

6. LPG Stations: 10

7. Fishing Vessel Fueling Stations: 38



6. Natural Gas Infrastructure



II. Future Policy Direction



❑ The structure of the primary energy supply for the year 2020 will be as follows

- ☞ Coal 27-30%
- ☞ Petroleum 37-40%
- ☞ Natural Gas 14-16%
- ☞ Hydro 1-3%
- ☞ Nuclear 13-15%
- ☞ Renewable Energy 1-3%.



❑ The structure of the installed capacity for the year 2020 will be as follows

- ➡ Coal-fired 35-37%
- ➡ Oil-fired 4-5%
- ➡ Gas-fired 27-29%
- ➡ Hydro 9-11%
- ➡ Nuclear 19-20%
- ➡ Renewable Energy 1-3%.



III. Energy Development Plans

1. Deregulating Energy Enterprises
 2. Promoting Privatization of Electricity Sector
 3. Establishing a Nuclear-Free Chinese Taipei
 4. Strengthening Energy Efficiency & Energy Conservation
 5. Augmenting Research & Development on Renewable Energy
- 



1. Deregulating Energy Enterprises

□ Liberalization of Petroleum Industry

1. Privatization of CPC

»»» Expected date : Jan. 2004.

2. Legislation

»»» Petroleum Administration Law (draft) has been
approved by Legislature : Sep. 2001.

»»» Promulgation : Oct. 2001.



Set up Petroleum Fund

Source

- 1.Imported crude oil and petroleum products
- 2.Indigenous explored oil
- 3.Petroleum by-products of petrochemical industry

Amount

Petroleum Fund

Purpose

- 1.For government Security Stockpile
- 2.For subsidizing oil distribution & marketing for the remote and offshore regions
- 3.For encouraging oil and natural gas exploration
- 4.For energy R&D
- 5.For other necessary measures



2. Liberalization of Electricity Industry

The revised draft of the Electricity Law

- ➡ The revised draft of the Electricity Law will widely open the operating pattern of power generation. Whenever the legislature approves the draft, the monopoly of Taiwan Power Company will be eliminated.

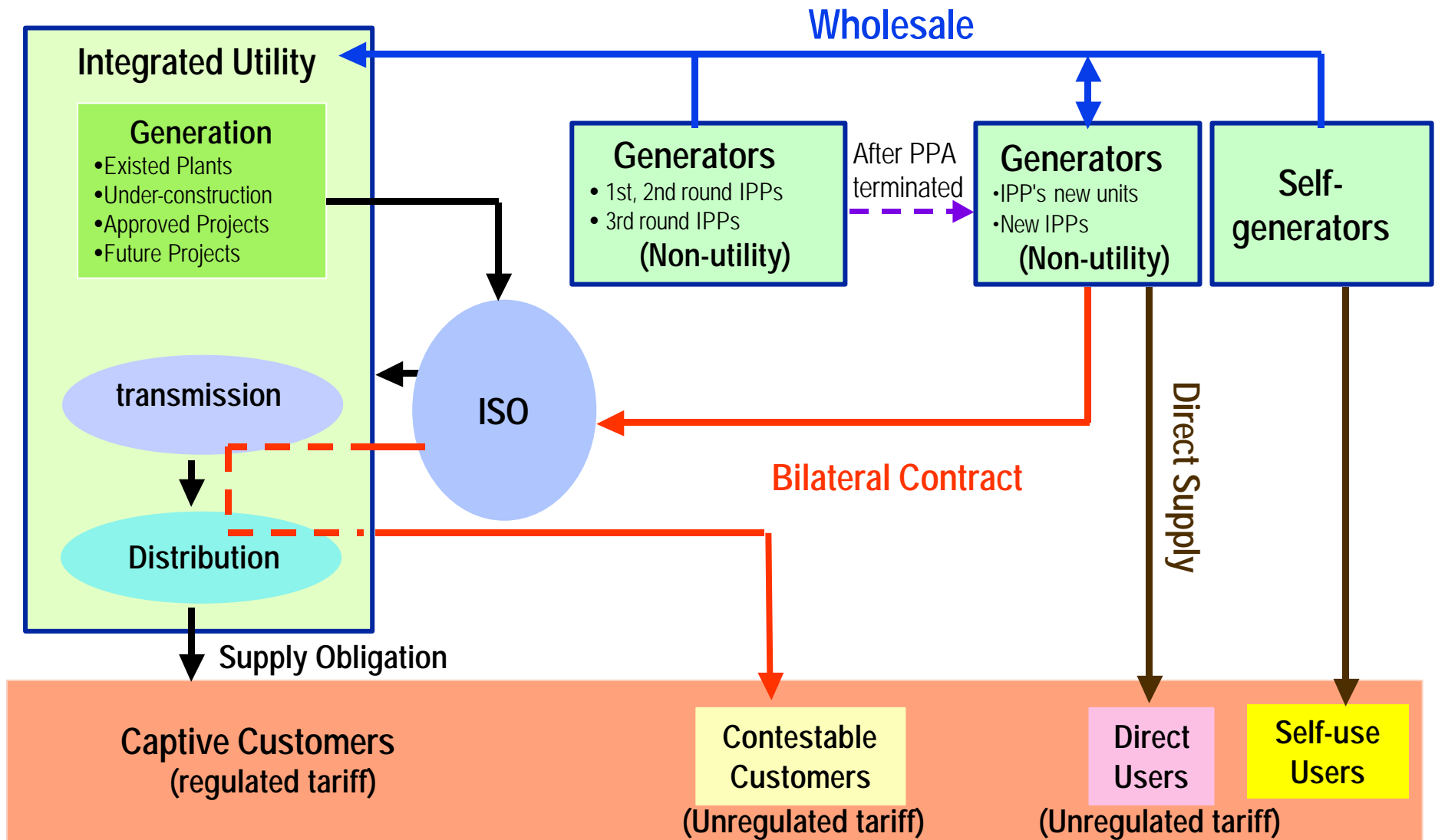


Revised Draft of Electricity Law

- ❑ To allow Taipower to be vertically integrated and independent of the privatization process.
- ❑ To allow new industries including generation, transmission, and distribution to enter the market whenever the law is approved.
- ❑ To establish the Independent System Operator(ISO).
- ❑ To allow electricity customers to choose their suppliers.
- ❑ Electricity industries must install certain percentage of clean energy capacity.
- ❑ Integrated utility and distribution company have the obligation to guarantee the supply of electricity sufficiently.
- ❑ To allow generators to supply power directly to nearby users through private power lines.



Basic Structure of Liberalization



IPP Programs

Policy Objectives

- To meet power demand at reserve margin of 20%

1st & 2nd rounds (1995): 10,260 MW (1997-2002);

3rd round (1999): 2,840 MW (2003-2004)

To balance regional supply and demand

Areas	Peak Demand	Peak Capacity
North	46%	25%
Central	26%	37%
South	28%	38%

- To prepare for power liberalization

1st & 2nd rounds: base load, medium load

3rd round: gas fired, medium load



Status of IPP Projects

Items	IPP Capacity	Status			Policy Achievement
Capacity (MW)	7,220 (20% of Total 36,680 MW in 2004)	Preparatory 1,950	Constructing 3,020	Operating 2,250	Reserve Margin will be 20% in 2004
Fuel Types		Gas 4,120	Coal 3,100		Gas Share will be 33% in 2004
Areas		North 3,280	Central 490	South 3,450	North will be self-sufficient in 2006



3. Establishing a Nuclear-Free Chinese Taipei

- ➡ Formulating a statute for the early decommission of the existing three nuclear power plants

4. Strengthening Energy Efficiency & Energy Conservation

- ➡ Establishing an energy efficiency index and auditing system
- ➡ Implementing an auditing system for energy users
- ➡ Raising the energy efficiency standards of equipment and revise fuel economy standards for vehicles



5. Augmenting Research & Development on Renewable Energy:

- ➡ **Implementing the Measures for Promoting Solar Water-Heating Systems (15-20% subsidized)**
- ➡ **Implementing the Measures for Promoting Solar Photovoltaic Systems (up to 50% subsidized)**
- ➡ **Implementing the Measures for Promoting Wind-Power Generators (up to 50% subsidized)**
- ➡ **Formulating the law and the program for developing renewable energy respectively**



IV. Coal Demand and Supply Outlook



Coal Demand

Unit:million MT

Year	Consumption						Total
	Steam Coal					Coking Coal	
	PowerGen.	Cement	Co-gen	Others	Sub.Total		
2000	21.9	2.2	7	8.4	39.5	5.1	44.6
2005	24.7	2.2	8.3	9.4	44.6	5.8	50.4
2010	30.4	1.8	8.5	5.8	46.5	5.8	52.3
2020	42.8	0.8	8.4	1.8	53.8	5.7	59.5
2025	50.3	0.4	9.5	2.8	63	5.7	68.7



Coal supply

Unit Million M.T.

Year	Domestic	Imported Coal			Total
		Steam	Coking	Subtotal	
2000	0.1	39.6	5.1	44.7	44.8
2005	-	44.6	5.8	50.4	50.4
2010	-	46.6	5.7	52.3	52.3
2020	-	53.8	5.7	59.5	59.5
2025	-	63	5.7	68.7	68.7



Trend of Power supply and Coal consumption

Year	2000	2010	2020	2025
Power Installation Coal-fired (%)	39.90	50.40	50.30	47.10
Power Supply Coal-fired (%)	42.00	41.70	42.30	45.70
Coal for Power Generation (Million Ton)	21.9	30.4	42.8	50.3

Note: Power installation and power supply exclude cogeneration.



CO₂ Emission-Energy Sector

year	1995	2000	2005	2010	2020	2025
Per Capita CO2 Emission (ton)	7.6	9.8	10.7	11.9	15.3	18.1
Total CO2 Emission (million ton)	162	218	247	284	380	456



V . Closing Remarks

- ❑ The energy development plans in Chinese Taipei aims at sustainable development through the integration of the 3E (economic development, environmental protection, and energy security).
- ❑ Coal may possibly be utilized as a quasi-carbon-free energy in Chinese Taipei.
- ❑ Coal is abundant and price-competitive, therefore, the outlook of coal in Chinese Taipei will still be relatively prosperous in the future.



